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fully examined such material for shells, but found no traces of them. These shells do not then belong to a preglacial fauna. The true interpretation of their history seems to be that there has been a retreat of the ice front some miles beyond its present position and a re-advance.

The remaining problem is, to what was the retreat and re-advance due, and when did it occur? The retreat was probably caused by the general subsidence in the north which is indicated by elevated deposits of recent shells in Baffinland, Grinnell Land and Labrador. A depression which amounted to 1,000 feet in Grinnell Land, and affected all or nearly all of the Arctic archipelago and probably Greenland, must have greatly increased the water area in the north and caused a corresponding rise of temperature. This rise of temperature would undoubtedly cause a retreat of the glaciers, permitting the sea to extend much farther up the fjords than at present, and in the shells which the ice cap is now carrying from the valleys of the interior we have proof that such a retreat occurred. With the elevation of the land in the north again, a lower temperature prevailed and the ice recovered some of its former territory.

E. M. KINDLE.

YALE UNIVERSITY, December 8, 1896.

CURRENT NOTES ON PHYSIOGRAPHY.

THE SIERRA NEVADA.

'FURTHER Contributions to the Geology of the Sierra Nevada,' by H. W. Turner (17th Ann. Rept. U. S. G. S., 1896, 521-1076) contain many geographical items. Oroville table mountain is illustrated in an excellent plate. The deep, steep-sided canyons that have been cut into the uplifted mass of the range often have benches on their slopes, caused by landslides; these, with the falls in the streams and the inaccessible character of the canyons, may be

taken as features of a youthful stage of geographical development. Associated with them as indications of recent uplift are occasional fault scarps, still steep and bare; one of these being shown in a plate. Of a little greater age are the fault-block lake basins, now drained by filling with sediments and cutting down at the outlet; Meadow valley being of this class. Mohawk valley, first holding a Pliocene lake in a fault basin, was afterwards obstructed in Pleistocene time by fragmental andesite flows. Much of the volcanic material, once broadly spread over the Sierra area and now greatly dissected since its regional uplift, is shown to be fragmental, coarse and fine, less or more stratified; it is compared in origin to the mud flows of modern volcanoes. The flows came from the crest of the range, and ran for fifty miles on the comparatively gentle slope of the then low-lying region. The 'hog-wallow' mounds on the valley plain and margin of the foothills are described and illustrated, but not definitely explained; they are one or two feet high, four to ten feet in diameter, and of the same pebbly soil as that on the intervening spaces.

NORTH CAROLINA AND ITS RESOURCES.

'NORTH CAROLINA and its Resources' is the title of a volume published by the State Board of Agriculture (Raleigh, 1896, 413 p., many plates), to which the geographer may refer with profit. The mountains, with their minerals, mines, forests, and attractive 'resorts;' the piedmont belt, with rich fields and great water powers, the coastal plain with its growing interests in truck farms and orchards, and the sounds with their fisheries, are all duly set forth. This report forms a fitting companion to a volume on 'South Carolina, resources and population, institutions and industries,' published some years ago by the State Board of Agriculture (Charleston, 1882).

The latter lacks illustrations, but has a soil map.

DUNGENESS FORELAND.

DR. F. P. GULLIVER continues his studies on Cuspate Forelands (*Bull. Geol. Soc. Amer.* VII., 1896), by a study of Dungeness foreland, on the southeastern coast of England, one of the best examples of its class; having read his paper on this subject at the Liverpool meeting of the British Association in 1896 (*London Geogr. Journ.* IX., 1897, 536-546). He gives a restoration of the initial shore line of the region, and outlines of successive stages in the growth of the foreland, whose cusp has grown eastward and outward during its enlargement. It now projects about ten miles into the channel from the original re-entrant of the coast; near the apex the shingle ridges or 'fulls' indicate the lines of progressive growth with much clearness. It is noted that English sailors have recognized forms in other parts of the world similar to this home example, and have applied the home name to two widely separated forelands; one in Puget Sound, the other in the Strait of Magellan.

A FAULT LINE IN AFGHANISTAN

AN account of the southern borderland of Afghanistan by Captain McMahon (*London Geogr. Journ.*, IX., 1897, 392-415) includes a description of a remarkable fault line, along which the topography of a growing displacement is visible. It was examined for a distance of 120 miles, on an almost direct course a little east of north, near the southeastern corner of Afghanistan; a well defined broad line of deep indentation, in many places as distinct as a deep railway cutting. It ran for a time along the border of the Registan plains, then obliquely traversed two mountain ranges, cutting the crest of one near its highest peak. Springs are common along it, and for this reason as well as be-

cause it forms a short cut across mountain spurs, the depression is commonly used as a thoroughfare. Igneous rocks form the country to the west, and sedimentaries lie to the east of the fault line. During the lifetime of the older natives, on the occasion of three severe earthquakes, deep fissures appeared along the depression, and the springs increased in volume. The line crosses a frontier railway near Chaman, beyond Quetta. A severe earthquake on December 20, 1892, opened a fissure where the fault crossed the track, distorting the rails, and lessening the distance between Quetta and Chaman by $2\frac{1}{2}$ feet. All the region is desert—bold, barren mountains, stony slopes, shifting dunes, alluvial and saline plains; many camels died in McMahon's trip across it.

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SCIENTIFIC NOTES AND NEWS.

PROFESSOR ALFRED M. MAYER, the eminent physicist, died at Maplewood, N. J., on July 13th, aged sixty-one years.

ON the recommendation of Hon. Chas. D. Walcott, acting Assistant Secretary of the Smithsonian Institution, in charge of the U. S. National Museum, an important change has been made in the administration of the Museum. Three sections have been organized—a section of anthropology, a section of biology and a section of geology, each having a head curator with an annual salary of \$3,500. Dr. W. H. Holmes has been appointed head curator of anthropology; Dr. Frederick W. True, head curator of biology, and Dr. George P. Merrill, head curator of geology. Dr. True and Dr. Merrill are already connected with the Museum, and it is expected that Dr. True will continue to act as the executive curator. Dr. Holmes leaves the Field Columbian Museum, Chicago, to accept this position, but was formerly connected with the U. S. Geological Survey and the Bureau of Ethnology.

THE Berlin Academy of Sciences made, at its last meeting, awards for scientific purposes